

Supplementary Information

Large Scale Restructuring of Porous Pt-Ni Nanoparticle Tubes for Methanol Oxidation: A Highly Reactive, Stable, and Restorable Fuel Cell Catalyst

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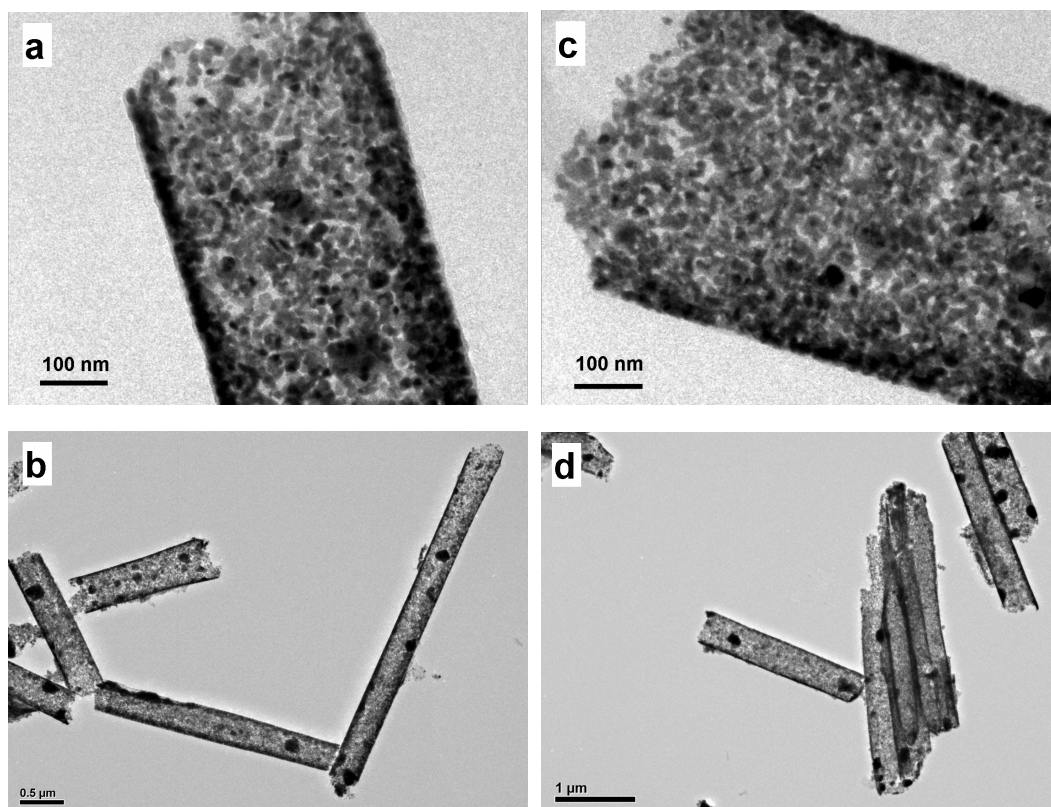


Fig. S1 TEM images before and after electrochemical annealing. (a) Tube orifice and (b) panorama of PNPTs before electrochemical annealing. (c) Tube orifice and (d) panorama of PNPTs after electrochemical annealing.

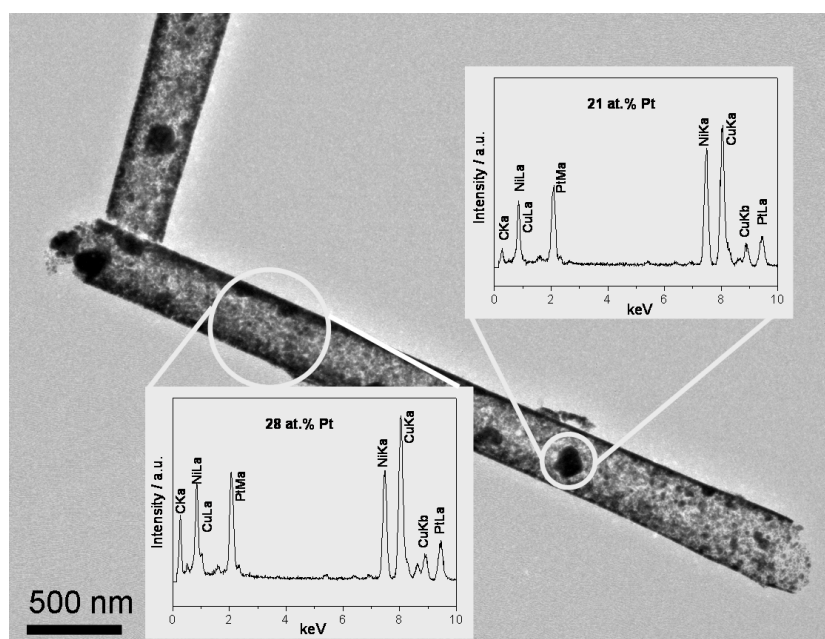


Fig. S2 EDX of the PNPTs before electrochemical annealing. The component difference between uniform and large particles.

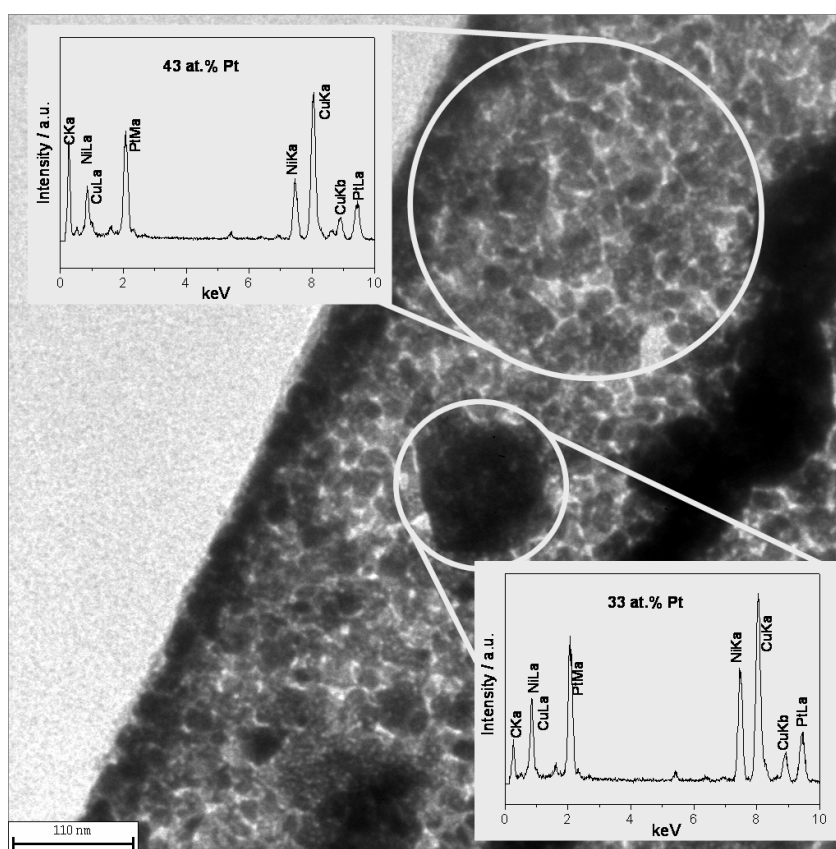


Fig. S3 EDX of the PNPTs after electrochemical annealing. The component difference between uniform and large particles was observed by EDX. The obvious surface rough can also be observed by amplified TEM.

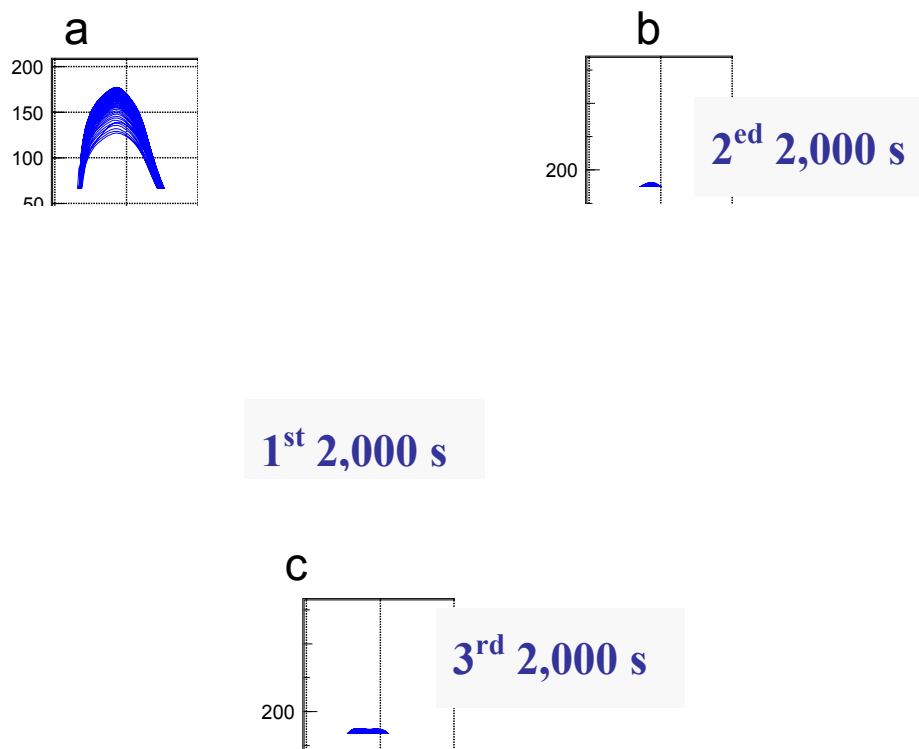


Fig. S4 CVs of the PNPTs were performed by electrochemical annealing after (a) first 2000s, (b) second 2000s and (c) third 2000s stability test. These results were used to estimate the recovery ability of PNPT catalysts.

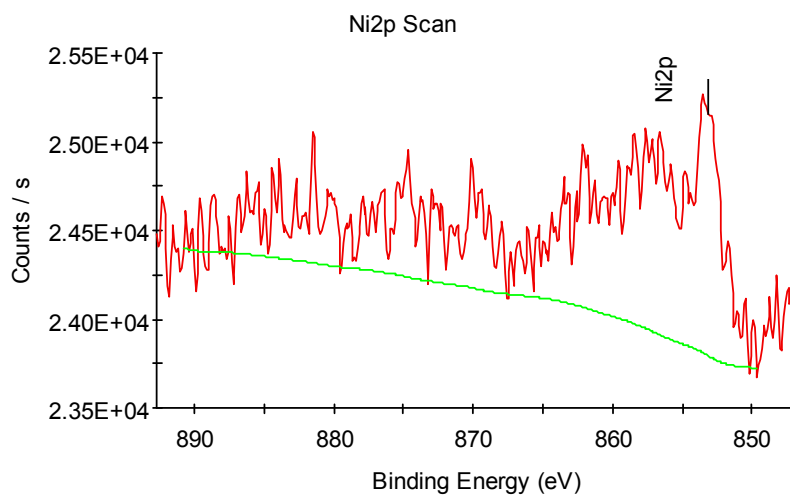


Fig. S5 X-ray photoelectron spectrum of Ni2p in PNPTs after potential cycling.